A STUDY OF SERUM URIC ACID LEVELS AND SERUM CREATININE LEVELS IN HYPOTHYROIDISM

BACKGROUND:

Hypothyroidism is a common endocrine disorder in which thyroid gland does not produce enough thyroid hormones.Thyroid hormones are required for the normal growth, development and function of nearly all tissues and also it is very essential for normal development and functioning of kidneys. Renal dysfunction occurs in hypothyroidism leading to biochemical abnormalities like elevated serum uric acid and serum creatinine levels and it is often overlooked.

Renal impairment occurs due to (i) PRE RENAL EFFECT- Influence of thyroid hormone on cardiovascular system (ii) INTRINSIC RENAL EFFECT- Influence of thyroid hormone on kidney structure, glomerular filtration, tubular secretory and reabsorptive capacities. Thus both the effects cause decrease in GFR leading to decreased excretion of serum uric acid and serum creatinine.

This study was designed for estimation and observation of changes in serum uric acid and serum creatinine levels and e GFR values in hypothyroid patients.

AIM AND OBJECTIVES:

To estimate serum uric acid, serum creatinine and e GFR level (calculated using MDRD equation) in newly diagnosed Hypothyroid patients and compare it with the values in (Euthyroid) healthy controls. Thus assess the detrimental effects of Hypothyroidism on renal function.

METHODOLOGY:

After getting ethical committee approval, a cross sectional study was done at Government Rajaji Hospital, Madurai. A total of 100 subjects (Study group : 50, Control group : 50) were selected randomly from the Endocrinology OPD, Government Rajaji Hospital, Madurai Medical College, Madurai according to inclusion and exclusion criteria.

After getting informed written consent, detailed history collected. General, systemic and neck examination done. Under strict aseptic precautions, 3ml of venous blood sample was collected and estimation of Serum Uric acid using Uricase Trinder method and Serum Creatinine using Modified Jaffe's method carried out in the Department of Biochemistry, Madurai Medical College, Madurai. Estimated GFR value calculated by MDRD equation.

eGFR (ml/min/1.73m$^{2)}$

=186 x (**S. Creatinine in mg/dl**)$^{-1.154}$ x (**Age in yrs**) $^{-0.203}$ (**for female** x 0.742)

RESULTS AND OBSERVATION:

Study Group (Hypothyroid) has significantly higher serum uric acid (p value<0.05), higher serum creatinine levels (p value<0.05), lower e GFR values (p value<0.05) as compared to control group (Euthyroid).

CONCLUSION:

In this study, there is increase in serum uric acid levels and creatinine levels and decrease in eGFR in hypothyroid patients as compared to the euthyroid controls. This shows the detrimental effect of hypothyroid state on renal functioning.

Hence it is recommended to assess the renal status at the time of diagnosis of Hypothyroidism and in follow up phase. It is suggested to do Thyroid screening in person presenting with these biochemical abnormalites .

KEY WORDS

Hypothyroidism, renal dysfunction, serum uric acid, serum creatinine, e GFR.